



Massachusetts Department of Public Health  
Bureau of Infectious Disease and Laboratory Sciences

# **Update on the Lowell/Lawrence HIV Outbreak Among People who Inject Drugs**

**Massachusetts Public Health Council  
April 3, 2019**

**Kevin Cranston, MDiv  
Assistant Commissioner  
Director, Bureau of Infectious Disease and Laboratory Sciences  
Massachusetts Department of Public Health**

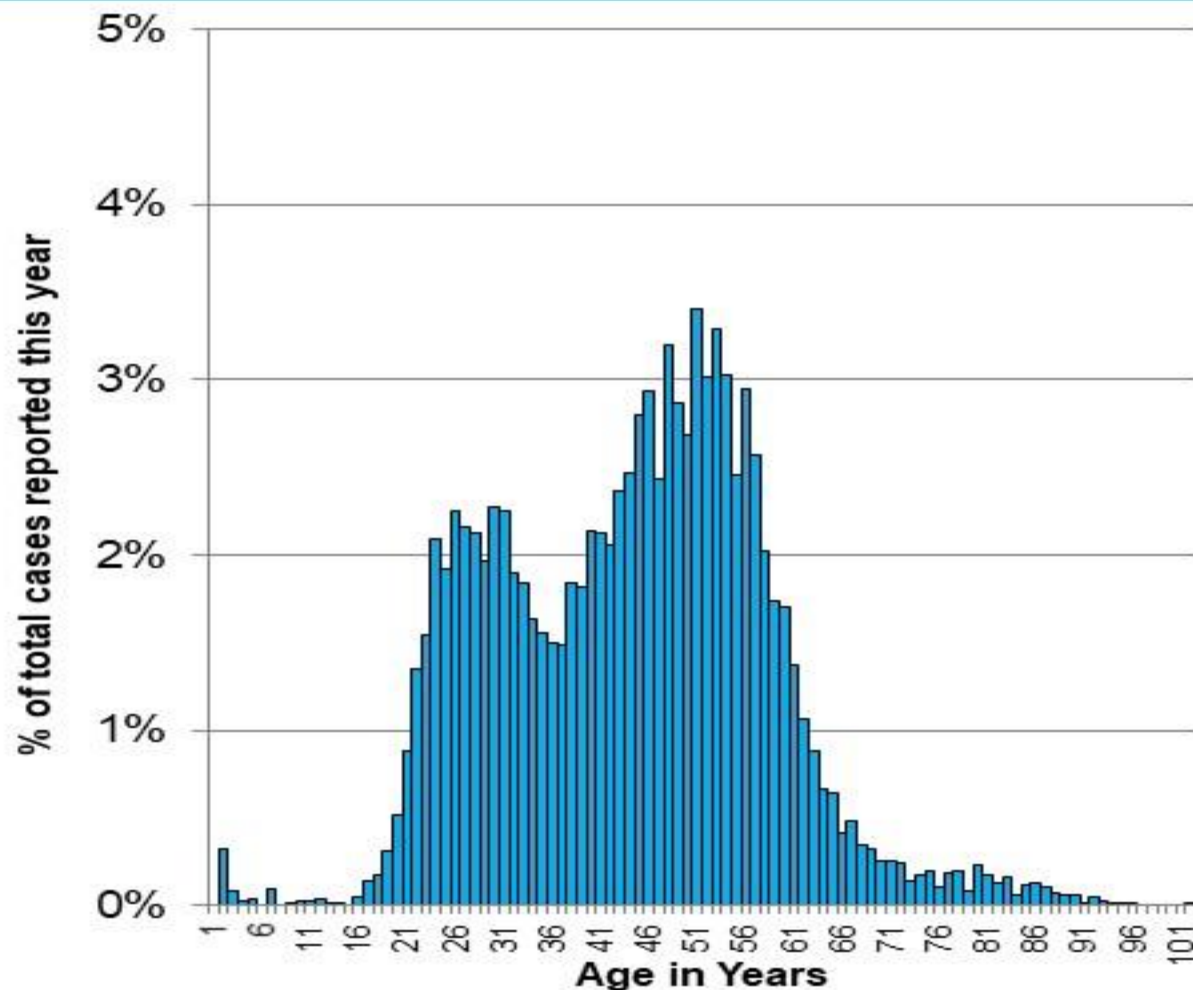
Where it all started: under the Casey Bridge in Lawrence



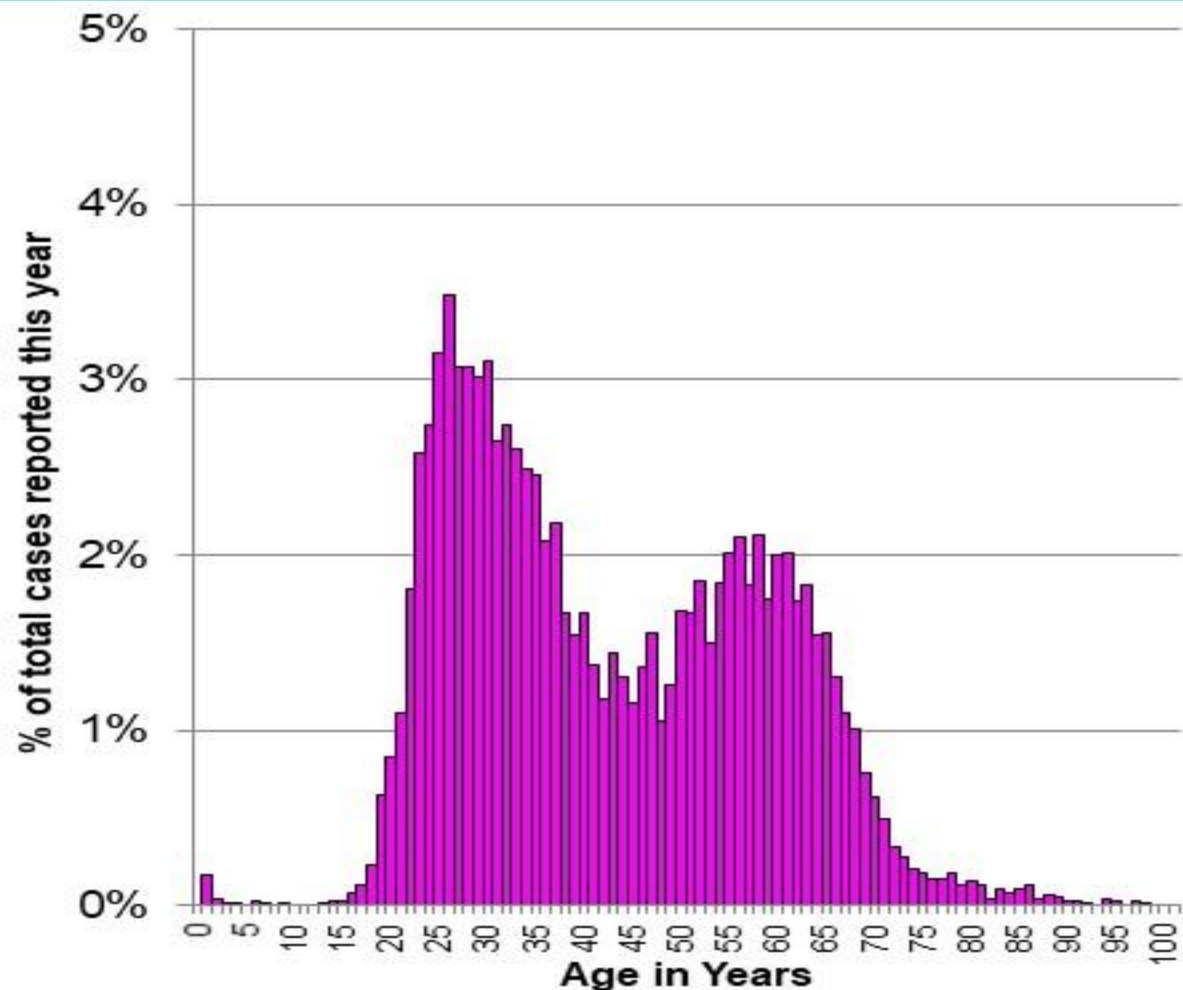




# Distribution of Confirmed and Probable Hepatitis C Cases by Age: 2007 Versus 2015



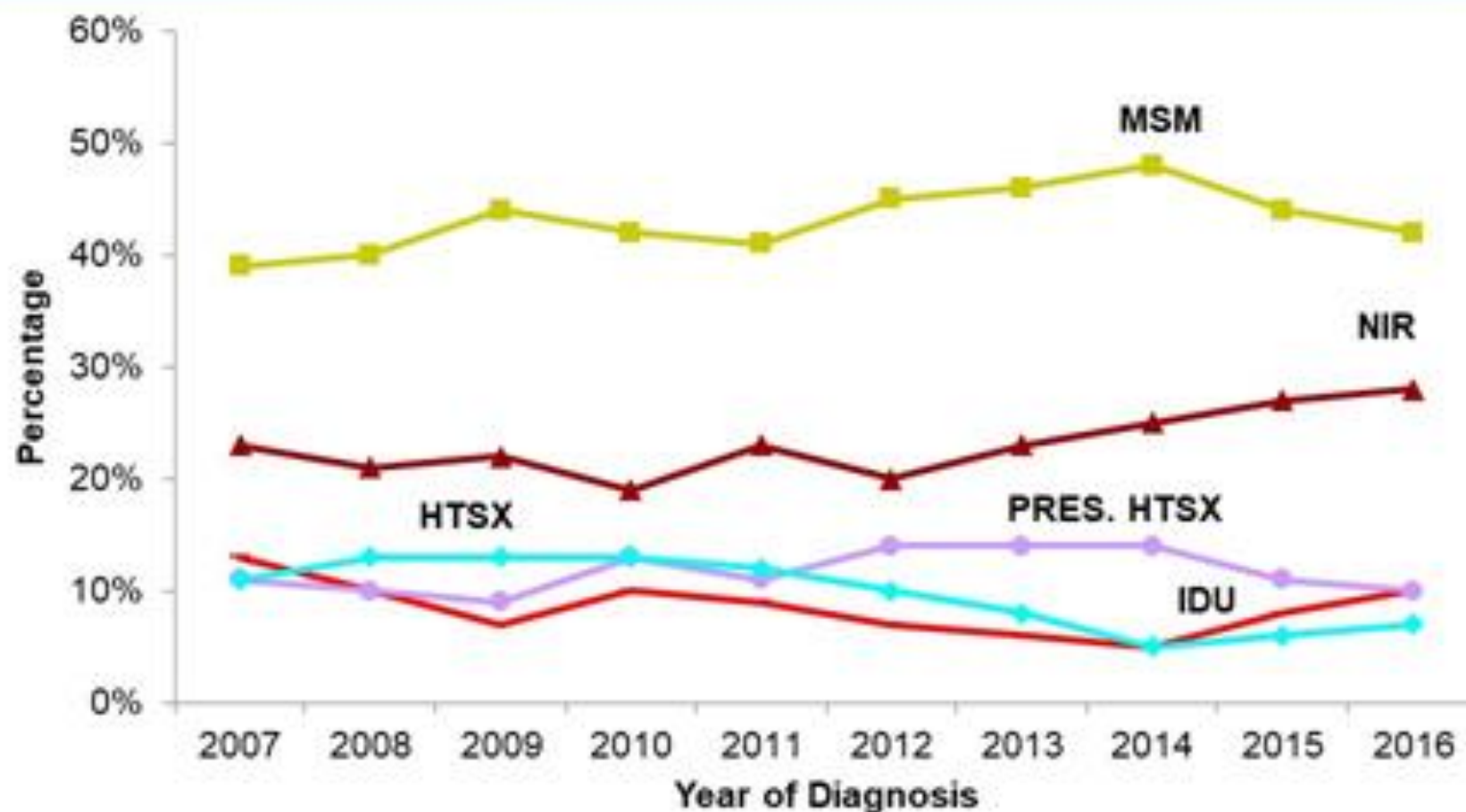
**2007: N=8,649, excludes 476 missing**



**2015: N=9,026, excludes 16 missing**

Data Source: MDPH, Bureau of Infectious Disease and Laboratory Sciences, data are current as of 8/9/17 and subject to change

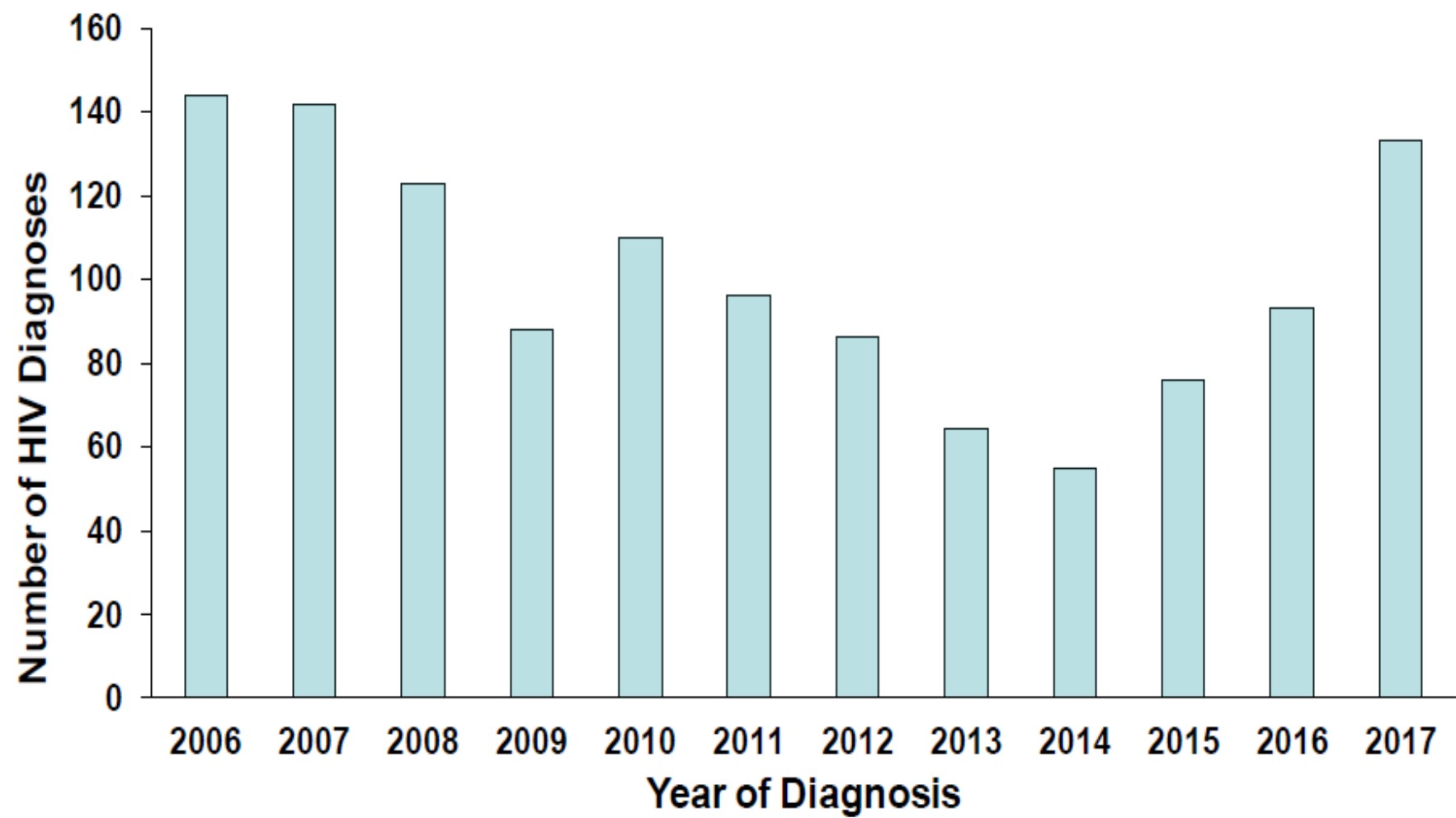
# Trends in the Percentage Distribution of Individuals Diagnosed with HIV Infection by Selected Exposure Mode<sup>1</sup> and Year of Diagnosis: Massachusetts, 2007–2016



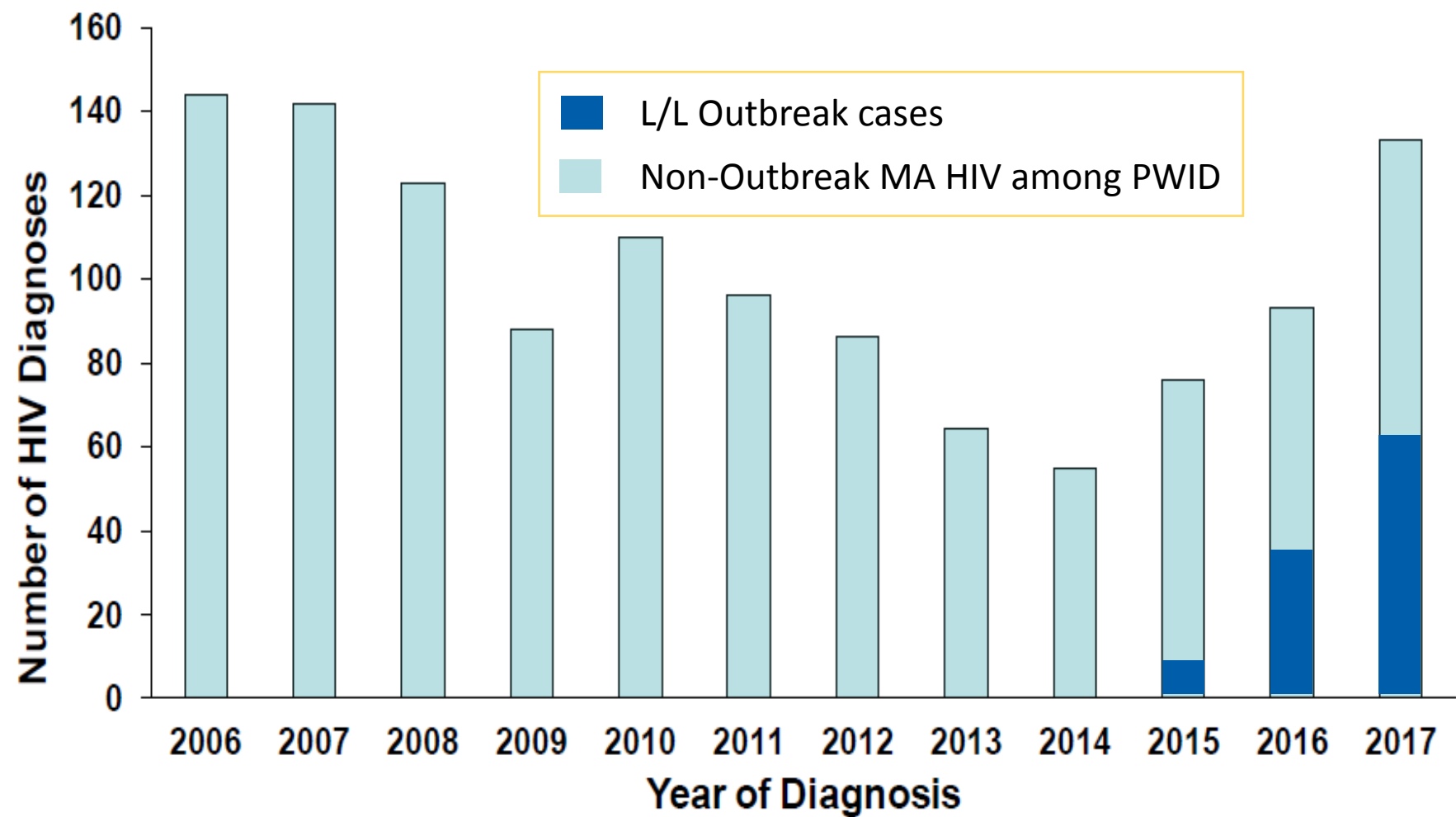
<sup>1</sup> Values less than five are suppressed to protect privacy

N=6,972, 2007–2016; HTSX=heterosexual sex, IDU=injection drug use, MSM=Male-to-male sex, NIR=no identified risk, Pres. HTSX=Presumed Heterosexual Sex, Data Source: MDPH Bureau of Infectious Disease and Laboratory Sciences; Data as of 1/1/18

**Diagnoses of HIV among PWID had been decreasing in MA through 2014**  
**These diagnoses have been increasing since 2015**

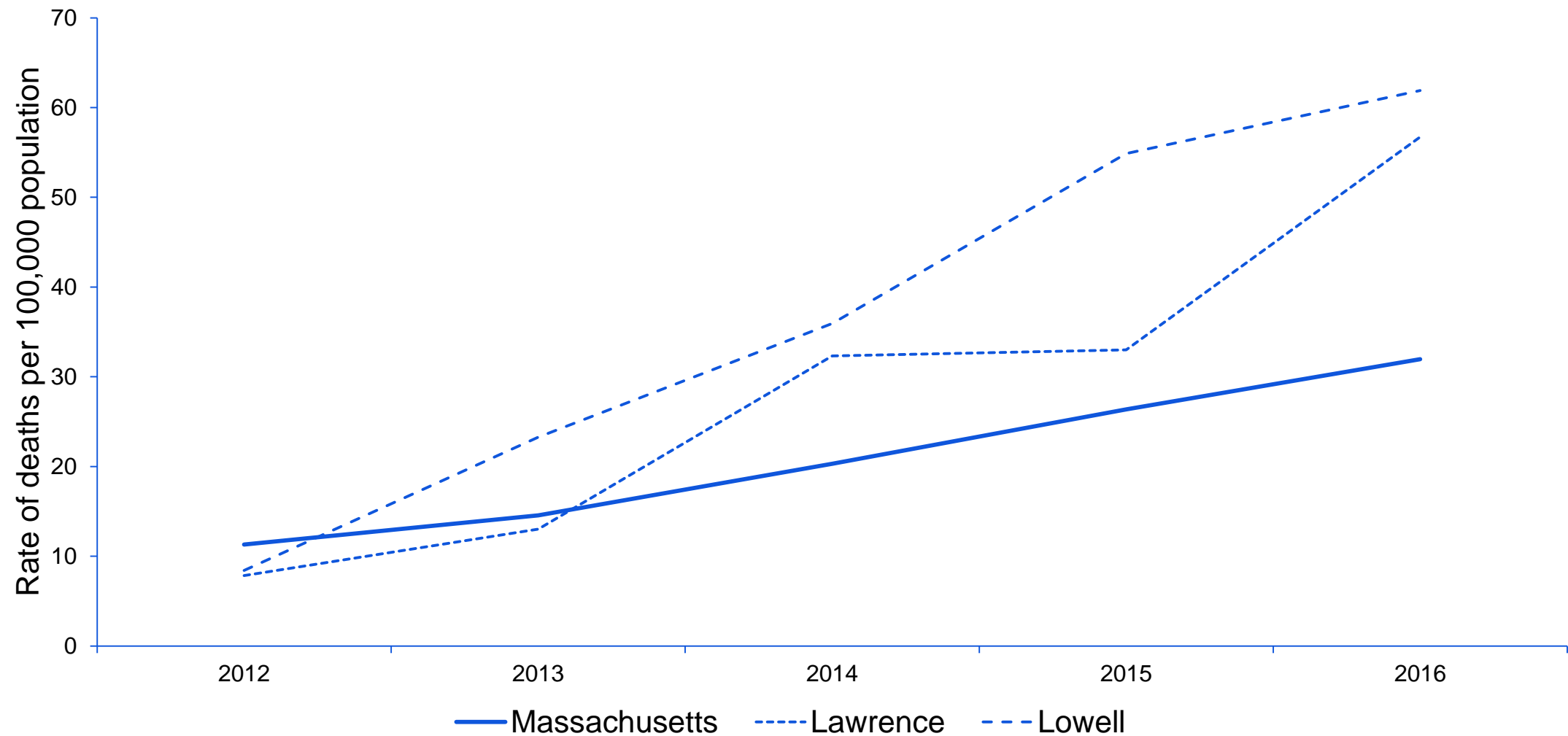


# Outbreak in Lawrence and Lowell accounted for an increasing proportion of HIV infections among PWID in Massachusetts 2015-2017



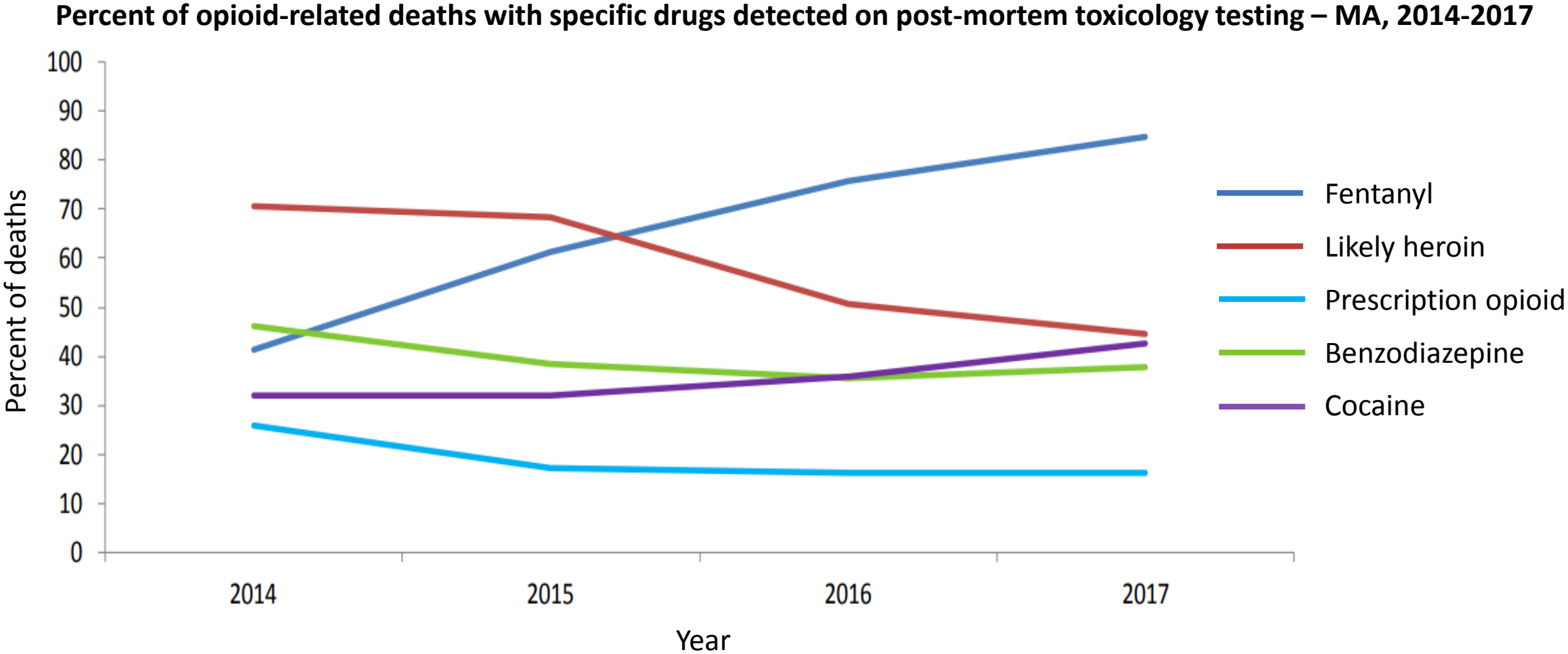
# Fatal opioid overdoses increased over time in Massachusetts through 2016

## Higher rates of increase seen in Lowell/Lawrence





# Fentanyl detection increased among fatal opioid overdoses Massachusetts 2014-2017



“If I don’t have a needle, they did but it was already used and they’d be like “do you care?” and I was like no. And I only said no only being like dope sick or just wanting the next fix.”

## **Principle risk: OVERDOSE**

“We were all taught it’s gonna die after, like, 3 or 5 seconds after hitting the air. So we would pull out the plunger and just like wait and then put it back in and use it.”

**“I shoot up and then next thing I know I’m feeling really sick, and I start talking... to my girlfriend, like “was there like coke in this dope? stay away from me, I’m mad at you.” I was pissed at her... And then she’s like “I just narcan’ed you twice.””**

“If I don’t have a needle, they did but it was already used and they’d be like “do you care?” and I was like no. And I only said no only being like dope sick or just wanting the next fix.”

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## Misconceptions of risk

**“We were all taught it’s gonna die after, like, 3 or 5 seconds after hitting the air. So we would pull out the plunger and just like wait and then put it back in and use it.”**

**“If I don’t have a needle, they did but it was already used and they’d be like “do you care?” and I was like no. And I only said no only being like dope sick or just wanting the next fix.”**

## **Low threshold for risk taking**

“I shoot up and then next thing I know I’m feeling really sick, and I start talking... to my girlfriend, like “was there like coke in this dope? stay away from me, I’m mad at you.” I was pissed at her... And then she’s like “I just narkan’ed you twice.””

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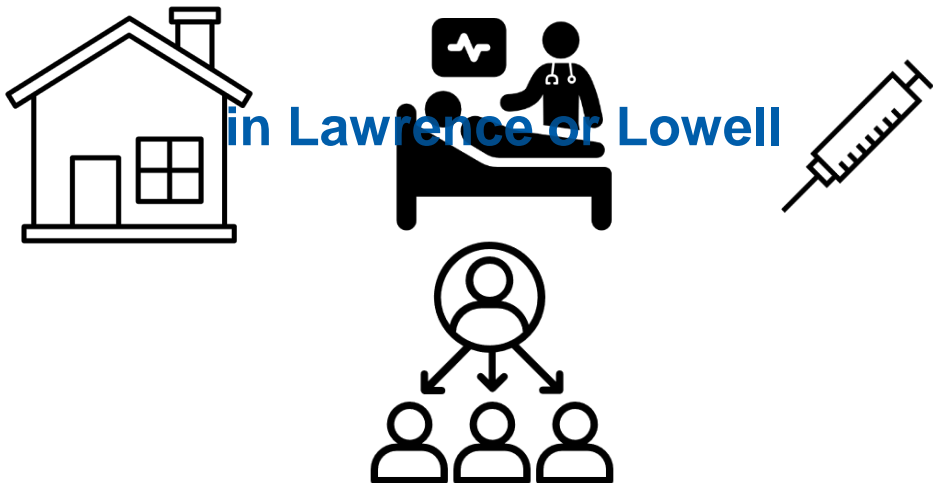


# The Case Definition

HIV infection diagnosed January 2015 to June 2018

## Epidemiological Criteria

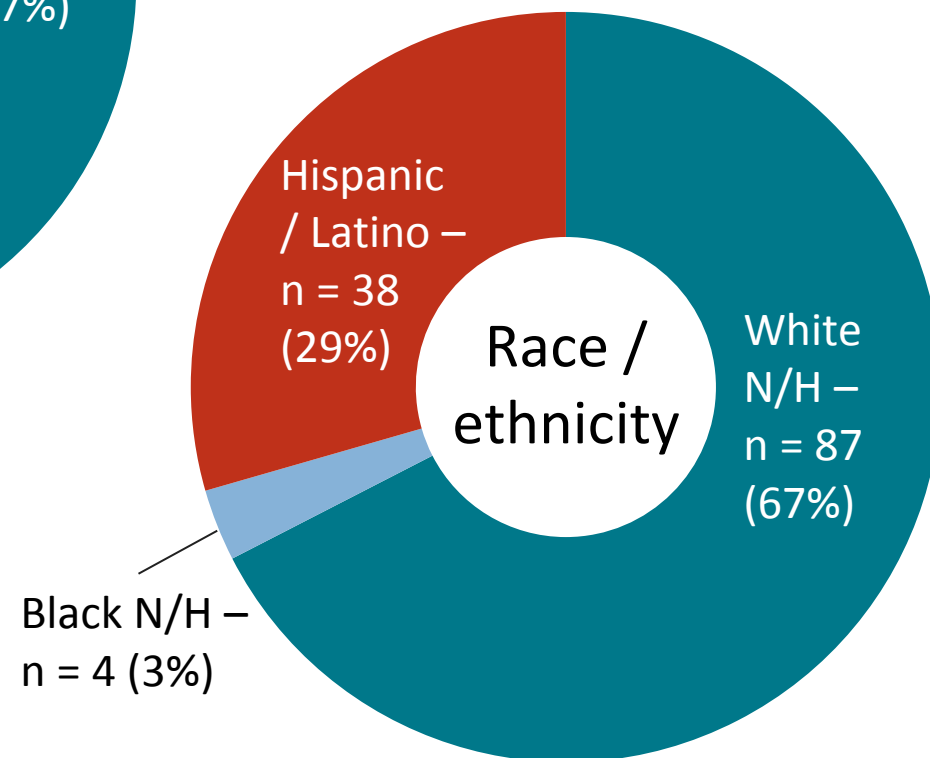
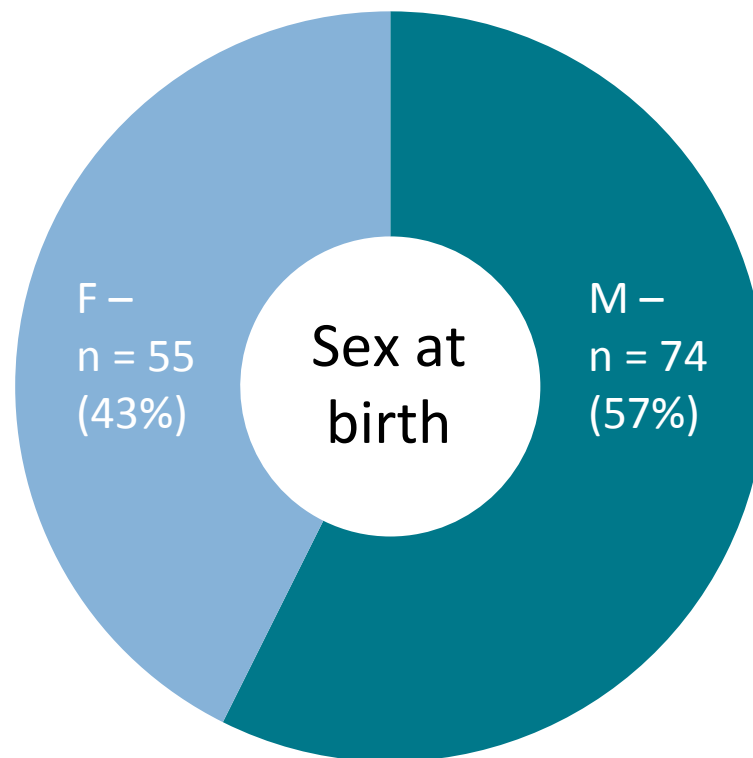
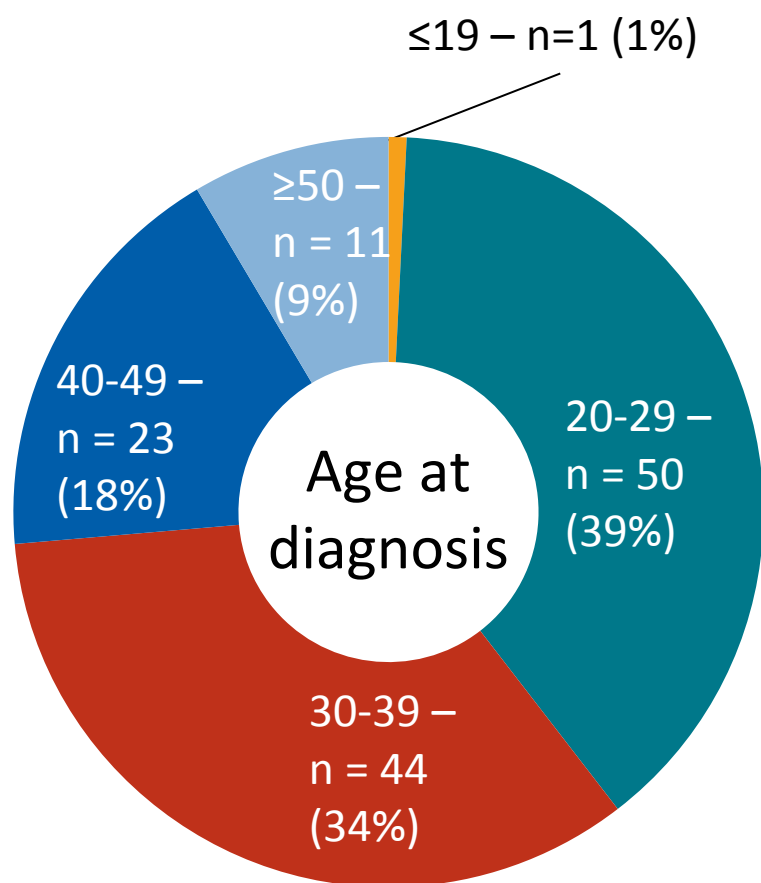
In a person who injects drugs who....



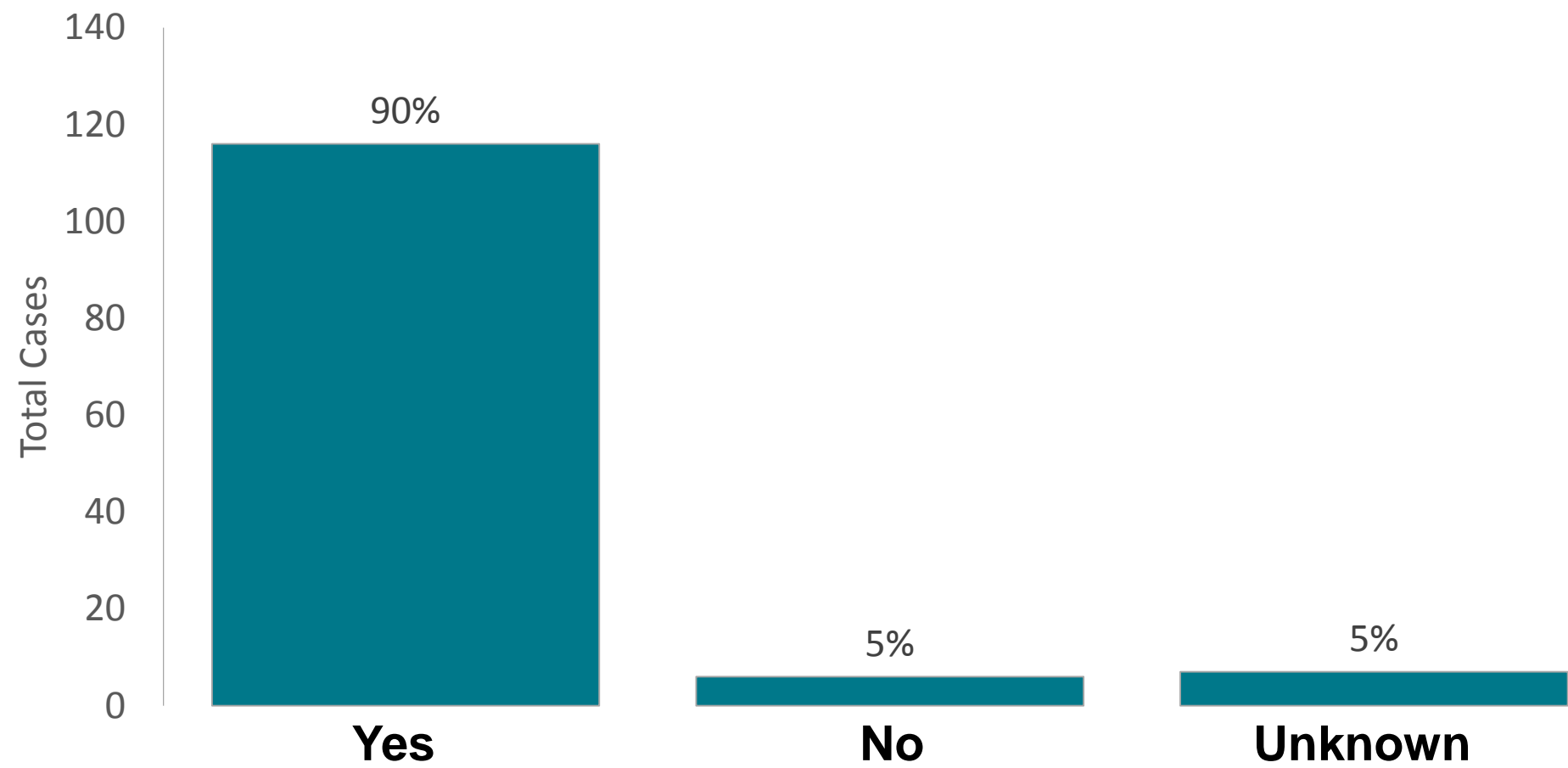
## Molecular Criteria



# Case Demographics



# Most cases had evidence of current or past hepatitis C infection.

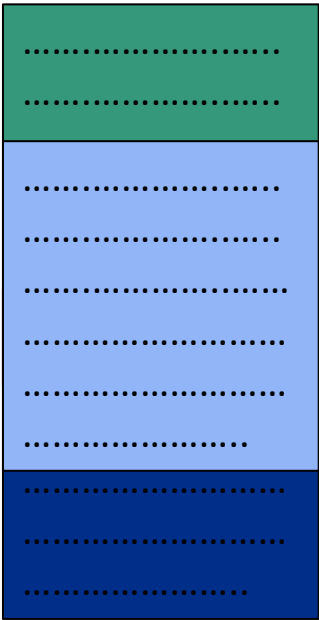


# Molecular analysis linked many new cases to the investigation.

Molecular links  
only - 29 (22%)

Molecular & Epi  
links - 73 (57%)

Epi links only -  
27 (21%)



**129 Cases**



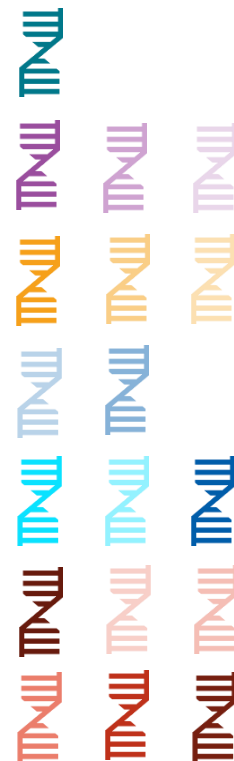
# Molecular surveillance is used to determine transmission networks

HIV polymerase  
gene sequenced  
in routine care

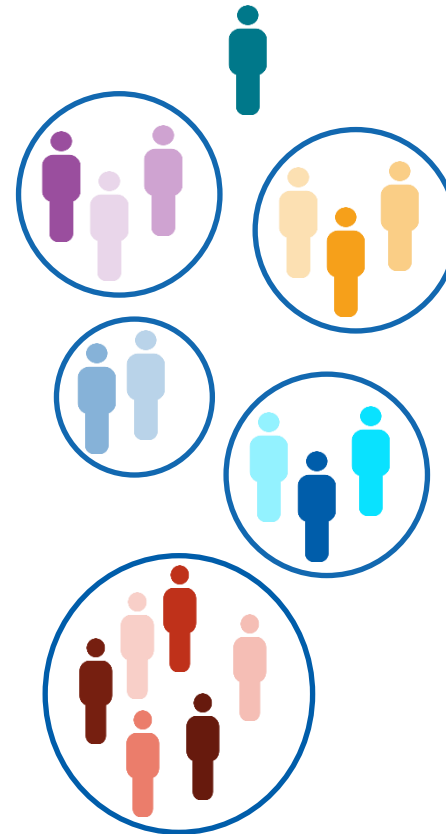


Similar sequences  
grouped

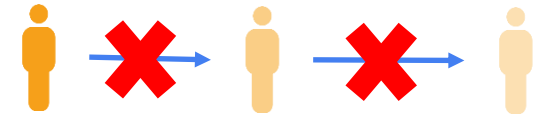
Secure  
HIV-TRACE



Transmission  
NETWORKS

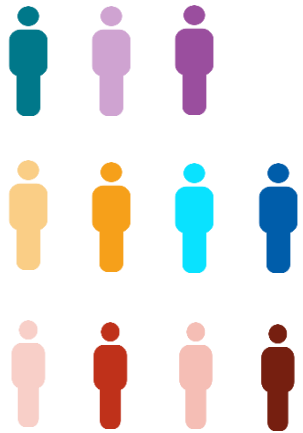


**NOT**  
Directionality of  
infection



# Molecular surveillance is used to determine transmission networks and link cases to an outbreak.

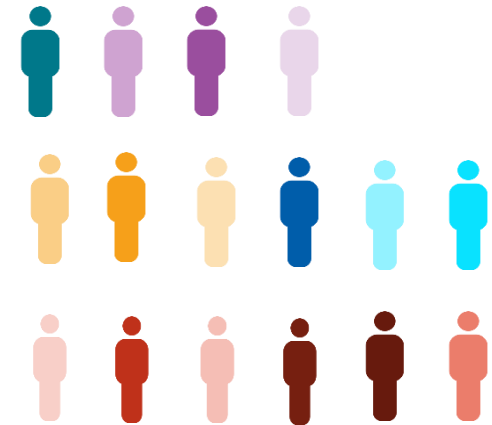
Initial outbreak  
line-list



Transmission networks identified  
through molecular analysis

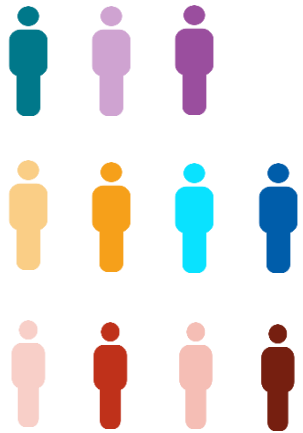


Add cases in same network  
as others with known epi link



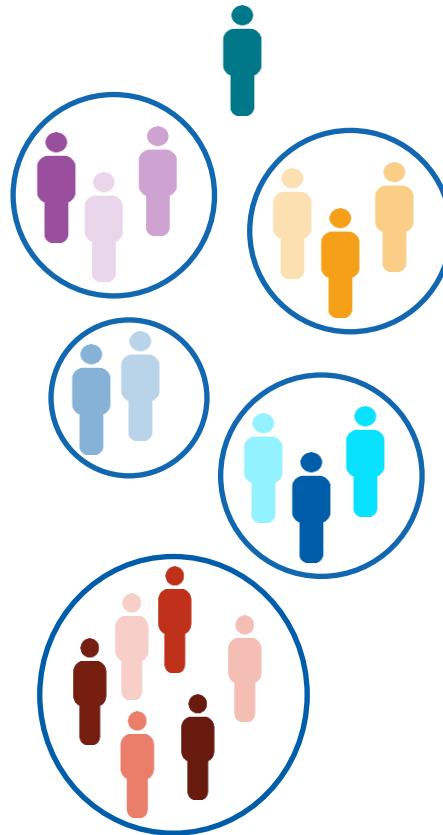
# Molecular analysis linked many new cases to this investigation.

Initial outbreak  
line-list

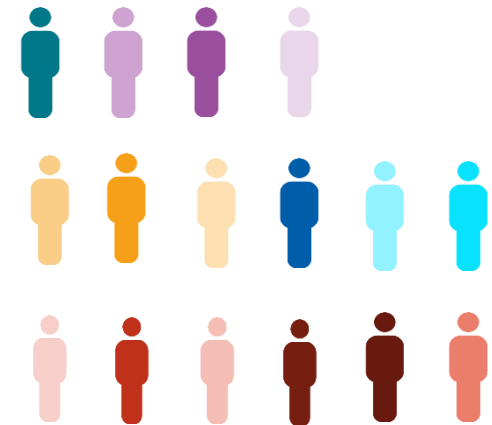


**86 cases on  
initial line list**

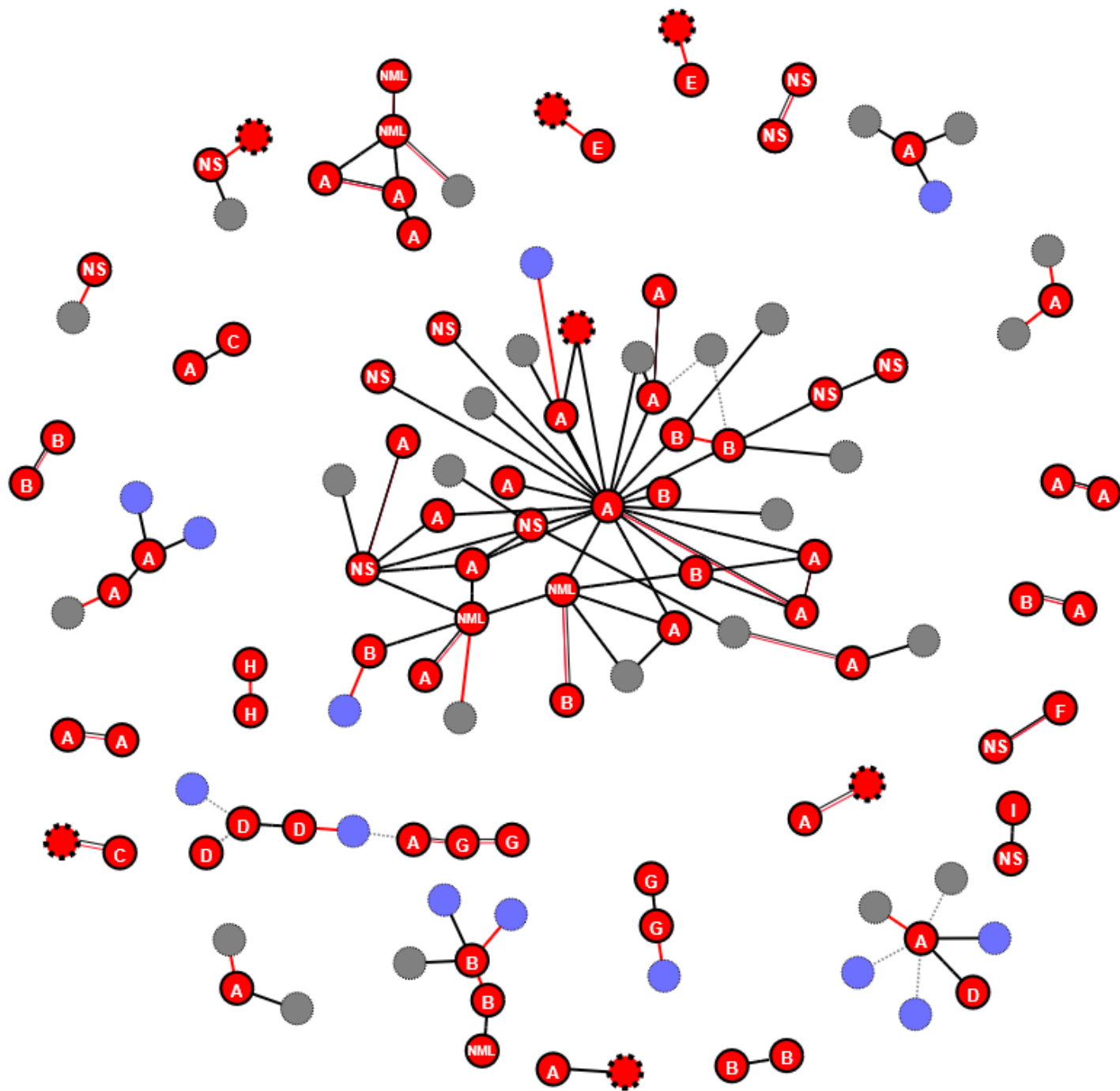
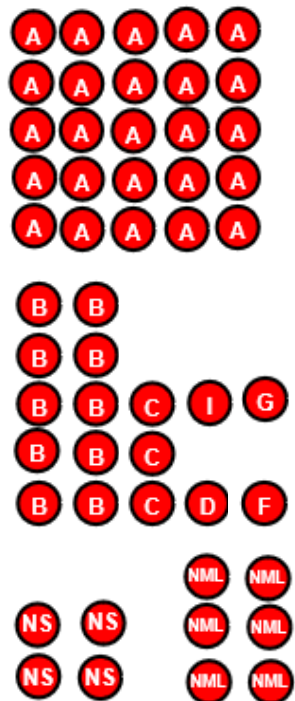
Transmission networks identified  
through molecular analysis



Add cases in same network  
as others with known epi link



**129 cases  
epidemiologically or  
molecularly linked**



- HIV positive case
- ⚙ HIV positive non-case
- HIV negative
- HIV status unknown
- Injection partner
- Sex partner
- ⋯ Other contact

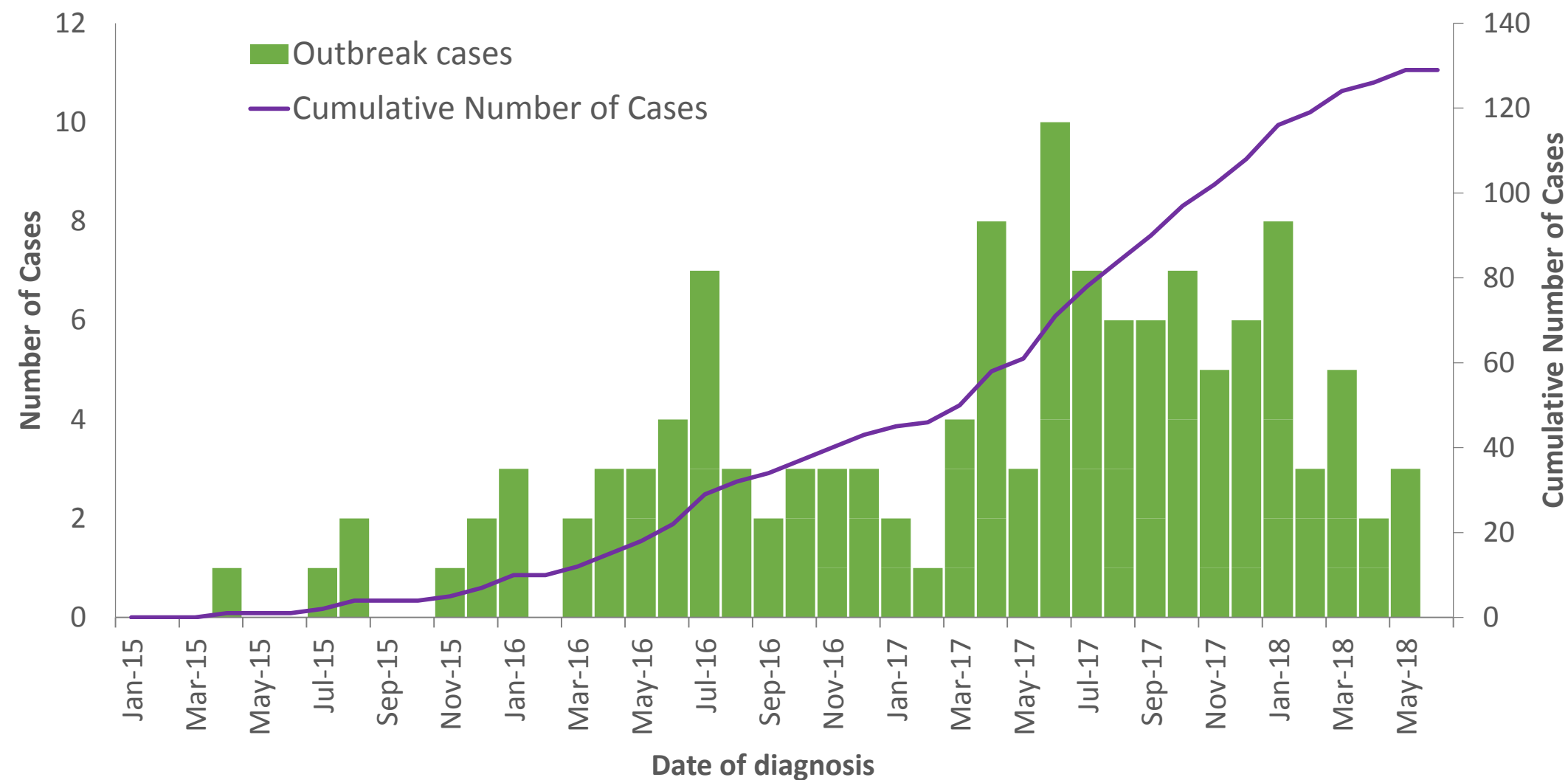
Molecular Clusters  
A, B, C, D, E, F, G, H, I

NS – No sequence available

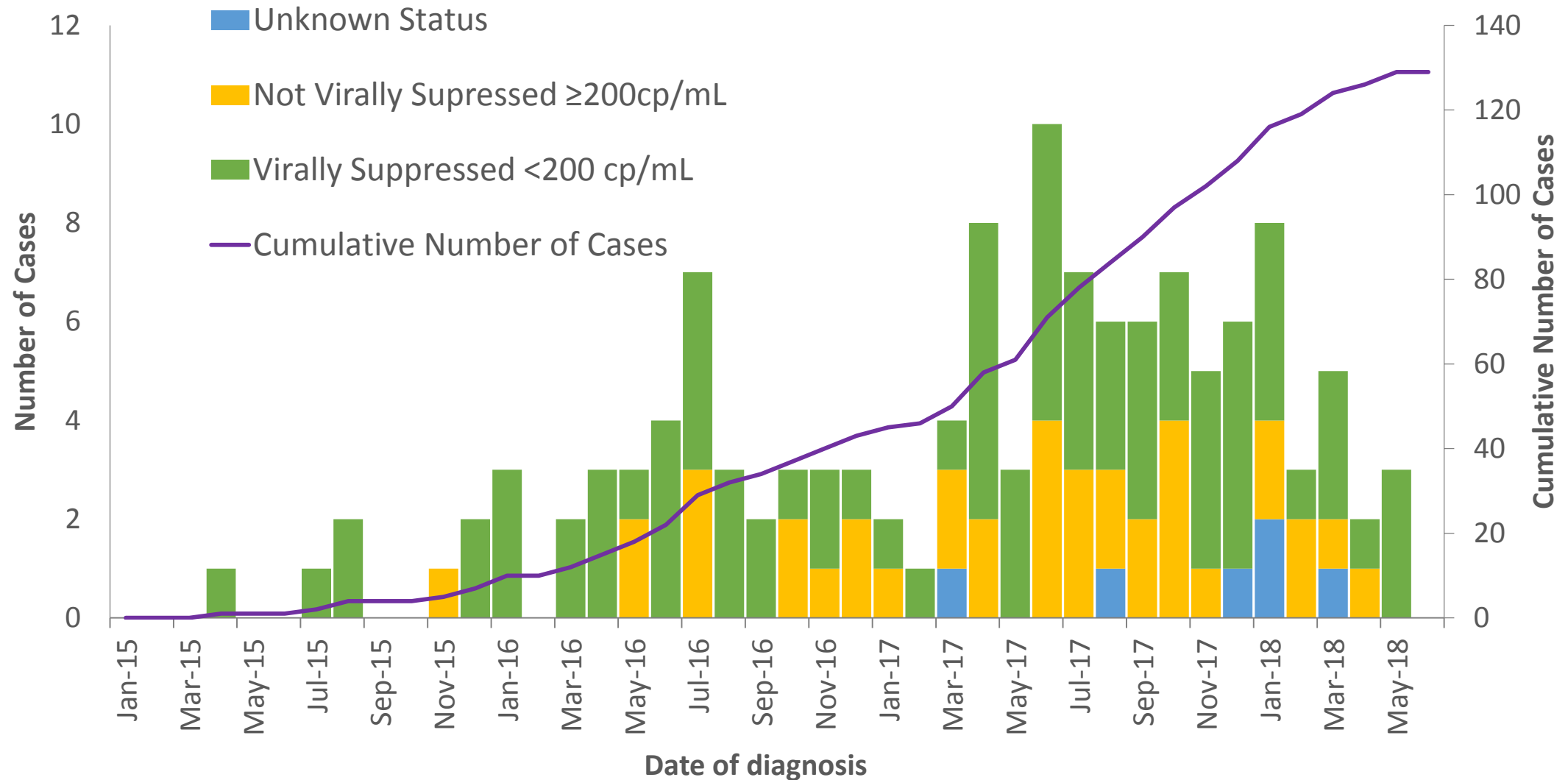
NML – Not molecularly  
linked to  $\geq 1$  other case



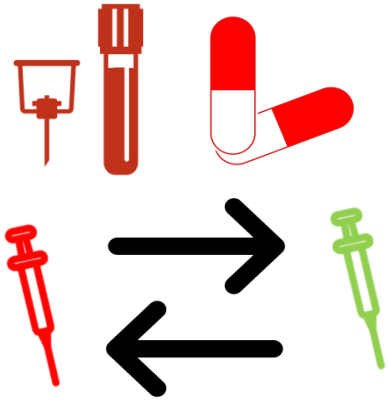
# Lowell/Lawrence HIV Cluster Epi Curve



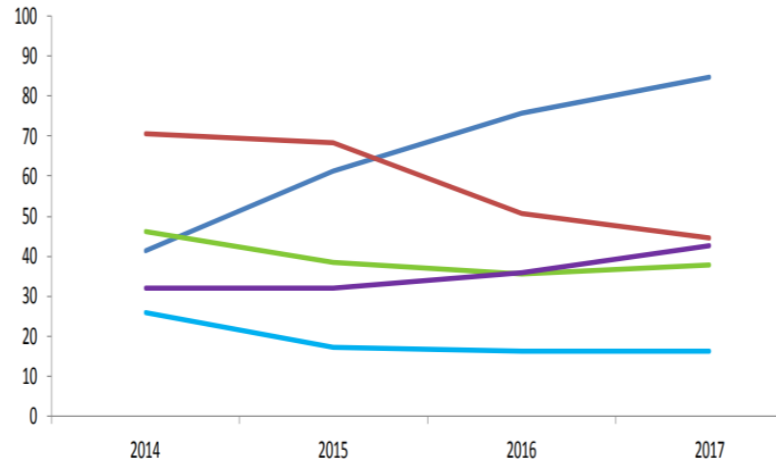
# Viral Suppression among Lowell/Lawrence Cluster Cases



# Conclusions



**HIV has emerged  
despite  
availability of  
services**



**Fentanyl has  
increased  
opportunity for  
HIV transmission  
through more  
frequent injection**



**Molecular  
surveillance  
helped  
characterize the  
outbreak**



**Partnerships  
with community  
stakeholders  
vital**

# Public Health Response:

## ■ Clinical alerts (and attendant media)

- Statewide alert about increasing HIV diagnoses in PWID (November 2017)
- Joint alert with City of Boston about new HIV cluster in PWID (January 2019)
- Following identification of Worcester PWID cluster, statewide outbreak declaration (February 2019)

## ■ Stakeholder engagement

- local health, first responders, clinicians, HIV services providers, homeless services providers

## ■ Epi Aid support from CDC (started May 2018)

- Boston Public Health Commission lent their assigned EIS Officer, Dr. Charles Alpren

## ■ Molecular HIV surveillance initiated

- Increased case count linked to Lowell/Lawrence by 50%

## ■ Stakeholder and user interviews

- Source of considerable contextual information

## ■ Doubled state field epidemiology capacity

- Follow-up on all newly diagnosed and out-of-care HIV cases

## ■ \$1.7M contractual investment in region

- expanded testing and linkage services, new/expanded SSPs, user-level harm reduction materials, shelter support, first responder training on MAT access, additional ethnographic investigation

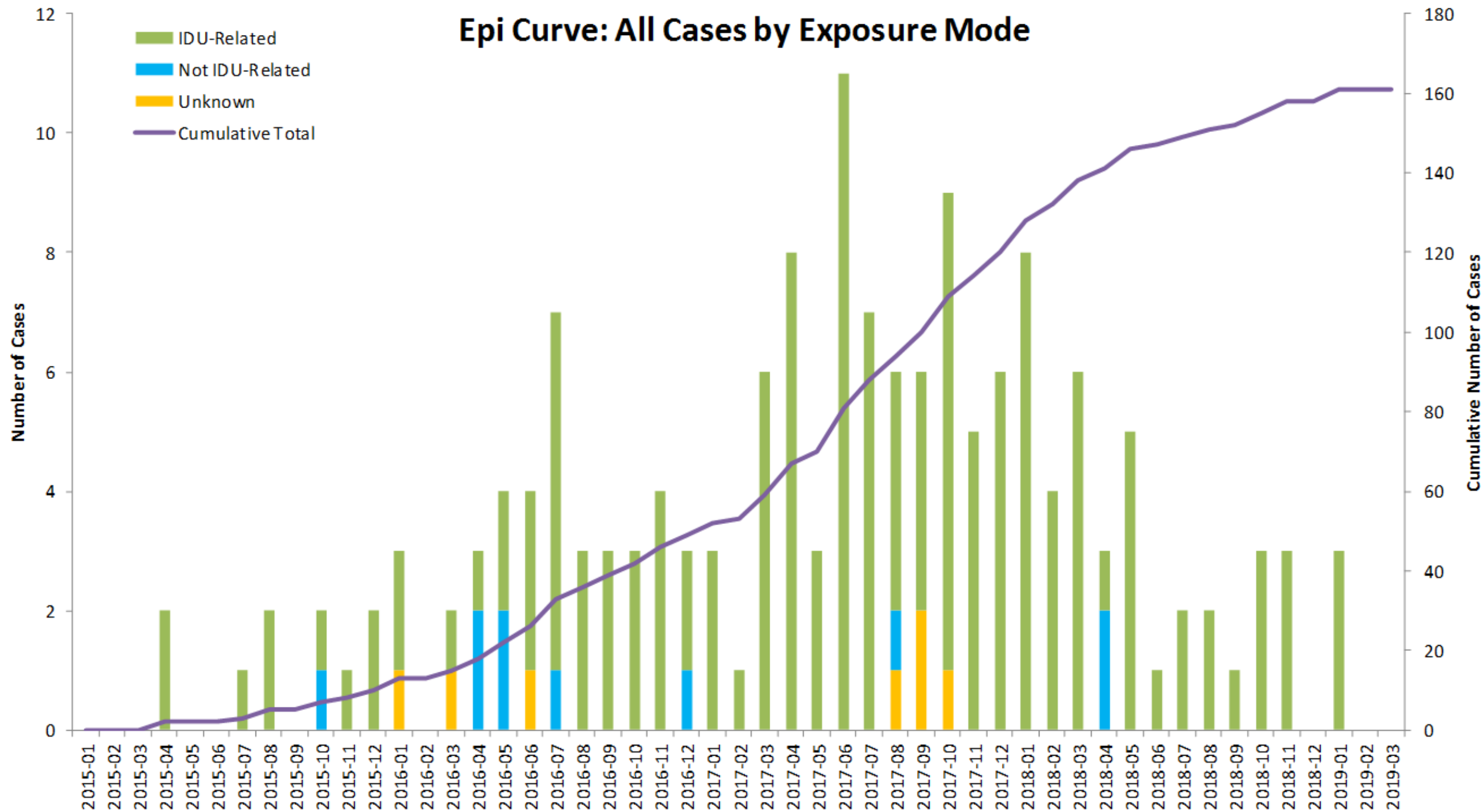


**Locally approved Syringe Services Programs in Massachusetts**  
**(as of March 2019, n=33)**



## Epi Curve: All Cases by Exposure Mode

- IDU-Related
- Not IDU-Related
- Unknown
- Cumulative Total





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**Thank you**

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